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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,663	07/17/2003	Avneesh Agrawal	030225	3856

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QUALCOMM, INC
5775 MOREHOUSE DR.
SAN DIEGO, CA 92121

EXAMINER

DEPPE, BETSY LEE

ART UNIT	PAPER NUMBER
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2637

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/622,663

Applicant(s)

AGRAWAL, AVNEESH

Examiner

Betsy L. Deppe

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2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 24-35 is/are rejected.
- 7) ☒ Claim(s) 1-23 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 102a, 102b and 102c in Figure 1. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: on page 1, line 5, "06/470,160" should be "60/470,160".

Appropriate correction is required.

Claim Objections

3. The claims are objected to because of the following informalities:
- a. in claims 1 and 3, the multiple occurrences of “at least one primary traffic channel” should be “at least **two** primary traffic **channels**” since “orthogonal to one another” on claim 1, line 6 suggests a plurality of primary traffic channels. In order to be consistent with this change, “at least one primary terminal” should be “at least **two** primary **terminals**” in claim 1, line 4 and “each of” should be inserted after “wherein” in claim 1, line 6.
 - b. in claims 6, 9, 20 and 23, the Examiner suggests changing “at least one primary terminal” to “at least **two** primary **terminals**” (see “each” on line 4 of the respective claims) and “each of” should be inserted after “wherein.”
 - c. in claims 6 and 19, the multiple occurrences of “at least one primary FH sequence” should be “at least **two** primary FH **sequences**” since “orthogonal to one another” on line 7 suggests a plurality of primary FH sequences. Furthermore, “each of” should be inserted after “wherein” on line 6. The respective dependent claims must also be amended accordingly.
 - d. in claim 20, the multiple occurrences of “at least one primary FH sequence” should be “at least **two** primary FH **sequences**” since “orthogonal to one another” on line 6 suggests a plurality of primary FH sequences. Furthermore, “each of” should be inserted after “wherein” on line 6.
 - e. in claim 23, the multiple occurrences of “at least one primary FH sequence” should be “at least **two** primary FH **sequences**” since “orthogonal to

one another” on line 6 suggests a plurality of primary FH sequences.

Furthermore, “each of” should be inserted after “wherein” on line 5.

Appropriate correction is required.

4. Claims 24-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. With regard to claims 24-30, it is unclear how the traffic channels assigned by the first base station and the traffic channels assigned by the second base station (see claim 24, lines 7-8) relate to the steps recited in claim 24, lines 3-6 since the steps recite the use of a single traffic channel.

6. With regard to claims 25 and 26, it is unclear what is meant by “canceled by the first base station.”

7. With regard to claims 31-35, it is unclear how the FH sequences assigned by the first base station and the FH sequences assigned by the second base station (see claim 24, lines 7-8) relate to the other limitations in the respective independent claims. For example, the steps in claim 31 involve one FH sequence (see “an FH sequence” in line 3) whereas the last two lines refer to a plurality of FH sequences.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 24, 27, 28 and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Persson et al. (US Patent No. 5,537,434).

10. With regard to claim 24, Persson et al. discloses the claimed invention including obtaining an assignment of a traffic channel from a base station (see column 7, lines 60-67) and encoding and modulating data to obtain data symbols (see 104 and 122 in Figure 2). Persson et al. also teaches that traffic channels assigned by a first base station are orthogonal to one another but are not orthogonal to traffic channels assigned by a second base station. (See column 3, lines 5-15)

However, Persson et al. does not disclose processing the data symbols for transmission to first and second base stations. Since the mobile stations are in contact with different base stations while moving from one cell to another (see column 4, lines 43-60), it would have been obvious to one of ordinary skill in the art at the time the invention was made to transmit the data symbols to the different base stations in order to avoid losing data when handoff occurs between the base stations.

11. With regard to claim 27, Persson et al. also discloses the claimed invention including a frequency hopping communication system. (See abstract)

12. With regard to claim 28, Persson et al. discloses the claimed invention including associating a specific one of a plurality of subbands to use in each time interval. (See column 8, lines 52-56 and "both frequency and time hopping" in column 9, line 7)

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13. With regard to claim 30, Persson et al. discloses the claimed invention including the first and second base stations being in different cells. (See Figure 1 and column 4, lines 44-45)

14. With regard to claims 31 and 33, Persson et al. discloses the claimed invention including obtaining an assignment of an FH sequence from a base station (see column 7, lines 60-67) and encoding and modulating data to obtain data symbols (see 104 and 122 in Figure 2) and providing the data symbols on subbands indicated by the FH sequence (see column 7, lines 60-62). Persson et al. also teaches that FH sequences assigned by a first base station are orthogonal to one another but are not orthogonal to FH sequences assigned by a second base station. (See column 3, lines 5-15)

However, Persson et al. does not disclose processing the data symbols for transmission to first and second base stations. Since the mobile stations are in contact with different base stations while moving from one cell to another (see column 4, lines 43-60), it would have been obvious to one of ordinary skill in the art at the time the invention was made to transmit the data symbols to the different base stations in order to avoid losing data when handoff occurs between the base stations.

15. With regard to claim 32, Persson et al. also discloses that FH sequences assigned by one base station are pseudo random with respect to those assigned by another base station. (See column 3, lines 5-15)

16. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Persson et al. as applied to claim 24 above, and further in view of Menzel (US Patent No.

6,504,837 B1). Persson et al. discloses the claimed invention except for the two base stations being in different sector of one cell. Since Figure 3 of Menzel teaches that one cell may have different sectors with each sector having a base station, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Persson et al. in a system with a cell as disclosed by Menzel in order to improve synchronization in a cell with multiple base stations. Whether the base stations are in different cells or in different sectors of the same cell does not impact the functionality of Persson's system.

17. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Persson et al. in view of Brajal et al. (US Patent No. 5,548,582). Figure 2 of Persson et al. discloses the claimed invention including a controller (130) (see also column 7, lines 33-37); an encoder (104); a modulator (122) and a switch (124) (see also column 7, lines 37-41). Persson et al. also teaches that traffic channels assigned by a first base station are orthogonal to one another but are not orthogonal to traffic channels assigned by a second base station. (See column 3, lines 5-15)

However, Persson et al. does not disclose an OFDM modulator operative to process the data symbols and then transmitting to the first and second base stations. Brajal et al. discloses combining frequency hopping with orthogonal frequency division multiplexing. (See abstract; column 3, lines 3-47) It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of

Brajal et al. with that of Persson et al. in order render the system more robust to selective fading. (See Brajal et al., column 3, lines 42-47)

Persson et al. in view of Brajal et al. does not disclose processing the data symbols for transmission to first and second base stations. Since the mobile stations are in contact with different base stations while moving from one cell to another (see Persson et al., column 4, lines 43-60), it would have been obvious to one of ordinary skill in the art at the time the invention was made to transmit the data symbols to the different base stations in order to avoid losing data when handoff occurs between the base stations.

18. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Persson et al. in view of Kostic et al. (US Patent No. 6,826,409). Persson et al. discloses the claimed invention including obtaining an assignment of a traffic channel from a base station (see column 7, lines 60-67) and encoding and modulating data to obtain data symbols (see 104 and 122 in Figure 2). Persson et al. also teaches that traffic channels assigned by a first base station are orthogonal to one another but are not orthogonal to traffic channels assigned by a second base station. (See column 3, lines 5-15)

However, Persson et al. does not disclose processing the data symbols for transmission to first and second base stations. Since the mobile stations are in contact with different base stations while moving from one cell to another (see column 4, lines 43-60), it would have been obvious to one of ordinary skill in the art at the time the

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invention was made to transmit the data symbols to the different base stations in order to avoid losing data when handoff occurs between the base stations.

Persson et al. also does not disclose storing the instructions/steps in a processor readable media. Kostic et al. teaches storing instructions/steps in computer readable memory. (See column 11, lines 32-43) It would have been obvious to one of ordinary skill in the art at the time the invention was made to store the steps disclosed by Persson et al. in a computer readable memory in order to easily implement the method with minimal circuitry.

Allowable Subject Matter

19. Claims 1-23 are allowable.

20. The following is a statement of reasons for the indication of allowable subject matter: prior art of record does not teach or suggests in combination a receiving method or apparatus that estimates interference due to at least one primary terminal, cancels the interference due to at least one primary terminal, and processes the interference-canceled symbol to obtain the decoded data for at least one secondary terminal wherein primary traffic channels or primary FH sequences are orthogonal to each other but not orthogonal to secondary traffic channels or secondary FH sequences.


Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references disclose methods and systems for removing interference: Akaka (US Pub. No. 2002/0196876); Gutleber (US Patent No. 4,470,138); Kostic et al. (US Patent No. 6,549,784); Kim et al. (US Patent No. 6,570,864 B1) and Kansakoski et al. (US Patent No. 6,570,909 B1).

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betsy L. Deppe whose telephone number is (571) 272-3054. The examiner can normally be reached on Monday, Tuesday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272 - 2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Betsy L. Deppe
Primary Examiner
Art Unit 2637